

# **EXHIBIT 2**

**SUR-REBUTTAL REPORT OF DR. CRAIG MOLGAARD  
(Epidemiology)**

1. I am Dr. Craig A. Molgaard, Professor and Chair of the School of Public and Community Health Sciences, College of Health Professions and Biomedical Sciences, Skaggs Building 353, Missoula, Montana 59812.

2. Background and Qualifications. I hold a Ph.D. in anthropology/health and medical sciences with an MPH in epidemiology, with both degrees earned at the University of California at Berkeley. I have been a National Institute of Heart, Lung and Blood Diseases post-doctoral fellow at UC Berkeley, an NIH pre-doctoral trainee at UC Berkeley, an instructor and research fellow at the Mayo Clinic, and have held faculty positions at the Graduate School of Public Health at San Diego State University (Assistant, Associate and Full Professor and Division Head, Division of Epidemiology and Biostatistics), at the University of Kansas School of Medicine-Wichita (MPH Program Director, Vice-Chair, Chair, Associate Dean for Research, Department of Preventive Medicine and Public Health), at the University of Montana (Professor and Chair, School of Public and Community Health Sciences) and at Washington State University (Research Associate, Intercollegiate Center for Nursing Education). I have also been a Visiting Professor in the Department of Primary Care and Prevention at the University of Oxford in England, and have also been a Visiting Professor at institutions in Denmark and Germany. I have received additional post-graduate training in epidemiology at the University of Minnesota Summer Program and the European Epidemiology Association Program in Florence, Italy.

I am a chronic disease epidemiologist and researcher, and am the author or co-author of over 160 papers in the areas of epidemiology, environmental health, social and behavioral health, and health promotion. I have carried out research in international health in Denmark, Germany, Finland, Great Britain, Japan, Mexico, and India.

I have served on the editorial boards of Neuroepidemiology and Cephalagia, and on various review panels for the Centers for Disease Control, the state of California, and the state of Kansas. I received the Samuel Crumbine Medal from Kansas Public Health Association. My research has been funded by the National Cancer Institute, the Environmental Protection Agency, the National Institute of Ageing, the Kansas Health Foundation, the California Public Health Foundation, the Robert Wood Johnson Foundation, and the Centers for Disease Control, among others.

3. Attached to this report are:

- a. A copy of my CV, which includes all publications within the last 10 years.
- b. A list of the primary documents relied upon for this report, and compensation information.
- c. A copy of my testifying history for the past four years.

4. This report primarily responds to W.R. Grace experts Dr. S.H. Moolgavkar (epidemiology) and Dr. H. Ory (epidemiology), and responds in part on epidemiologic matters to the reports of W.R. Grace experts Dr. D.A. Henry, Dr. J. Parker, Dr. D. Weill, and Asbestos Claimants Committee experts G. Friedman, Dr. G. Stockton, and Dr. L. Welch.

**5. Whitehouse (2004).** I have reviewed the publication titled Whitehouse (2004), "Asbestos-Related Pleural Disease Due Tremolite Associated With Progressive Loss of Lung Function: Serial Observations in 123 Miners, Family Members, and Residents of Libby, Montana," Am J Ind Med 46:219-225. I have reviewed the materials and methods for the report. The Whitehouse report follows the definition of a study by Olsen and Basso (2001) in Teaching Epidemiology (2<sup>nd</sup> Ed. 2001) Oxford University Press: "A study is a process – documented throughout from design to execution – that aims to provide empirical evidence on a given issue." Epidemiology can itself be defined as the study of the distribution of disease and injury in a population and the determinants of that distribution. Furthermore, the distinction is often made in epidemiology between descriptive and analytic epidemiology. The Whitehouse report is an example of a descriptive study, which as defined by Last in A Dictionary of Epidemiology (2001, Oxford University Press), is "A study concerned with and designed only to describe the existing distribution of variables, without regard to causal or other hypotheses. Contrast ANALYTIC STUDY. An example is a community health survey, used to determine the health status of the people in a community. Descriptive studies, e.g., analyses of cancer registry data, can be used to measure risks, generate hypotheses, etc." The Whitehouse study is an example of descriptive epidemiology. See also, "The Patient Record in Epidemiology," Scientific American (1981) Kurland and Molgaard, for examples of descriptive and analytic epidemiology carried out at the Mayo Clinic.

**6. Whitehouse et al (2008).** I have reviewed the publication titled Whitehouse, A.C., Black, C.B., Heppe, M.S., Ruckdeschel, J., and Levin, S.M., "Environmental Exposure to Libby Asbestos and Mesotheliomas," Am J Ind Med,

2008, 51(11):877-80. I would also consider this paper an example of descriptive epidemiology.

**7. CARD Mortality Study.** I have reviewed the study titled "CARD Mortality Study," as described in the Expert Report of Dr. Alan C. Whitehouse 12/29/08, Supplemental Expert Report of Dr. Alan C. Whitehouse 3/14/09, and Supplemental Expert Report of Dr. Alan C. Whitehouse May 2009. I consulted with Dr. Whitehouse and Dr. Frank regarding this study and other matters, beginning in December 2008. I have reviewed the materials and methods for the CARD Mortality Study and the Whitehouse Report generally, and they meet epidemiologic requirements.

**Response to Rebuttal Report of Suresh H. Moolgavkar, M.D., Ph.D. 4/6/09.**

**8.** This response will follow the subject headings in that report.

**9. CARD Mortality Study (Dr. Moolgavkar, p.2).**

**a. Protocol.** Dr. Moolgavkar's Report of 4/6/09, p.2, states there is "no protocol" for the CARD Mortality Study. It is not clear what he means by this remark. Certainly the CARD Mortality Study does not have the detailed protocol that we would expect of a clinical trial for example, but the examination of a series of clinical cases on several variables of interest in a systematic fashion would qualify as an example of what Last (2001) in a Dictionary of Epidemiology (Oxford University Press) calls a Case-Only Study, defined as "A method that analyzes data from a case series, with assumed or theoretical data on prior distribution of exposure rather than a control group."

**b. Comparison to insulators.** Moolgavkar, p.2, states "Dr. Whitehouse's comparison of the mortality experience of this cohort of patients with that of the insulators' cohort does not follow established scientific practice." This is incorrect. The comparison is described at Expert Report of Dr. Alan C. Whitehouse, 12/29/08, ¶ 32. Dr. Frank has determined that comparison of diagnosed CARD patients to highly probable diagnosed insulators is a proper comparison. It would also seem to me a reasonable comparison.

**c. Age.** Moolgavkar, p.3, states that "age . . . must be accounted for in any comparison of the mortality experience of two populations." . . . Age profiles are normally taken into consideration when comparing two populations. However, as Last (2001), p.145, notes, "unlike the standardized mortality ratio, it (the proportional mortality ratio) does not require data on the age composition of the

population but only on the deaths."

d. **Exposure to cause disease.** Moolgavkar, p.3, states: "Dr. Whitehouse has absolutely no information on the level of exposure to Libby fibers in his patient population." This is not necessary for an epidemiologic study. Most descriptive epidemiology studies, including those in the area of asbestos disease, do not inquire into dose/response relationships.

The diagnostic criteria for non-malignant asbestos- related disease are set forth at ATS (2004), "Diagnosis and Initial Management of Non-Malignant Diseases Related to Asbestos." Am J Respir Crit Care Med 170:691-715. Each diagnosis of asbestos-related disease requires "evidence of causation by asbestos as documented by the occupational and environmental history . . ." This means that a level of exposure to Libby fibers sufficient to cause disease has been found in each patient diagnosed.

e. **Etiologic fraction.** Moolgavkar, p.3, states: "A proper quantitative analysis of other exposures including, if possible, the estimation of the etiologic fraction, is imperative before any conclusions can be drawn regarding the contribution of Libby fibers to disease causation." The etiologic fraction, according to Last (2001), is also known as the attributable fraction for either those exposed or a population. The attributable fraction is "The proportion of all cases that can be attributed to a particular exposure. It is the attributable difference (attributable risk) divided by the incidence rate in the group. If the association is causal, this is also the proportion by which the incidence rate would be reduced if the exposure were eliminated. The attributable fraction may apply to exposed individuals (Attributable Fraction [Exposed]) or to the whole population (Attributable Fraction [Population]." However, in the Whitehouse analysis this is not necessary. As noted above, "evidence of causation by asbestos" is necessary to each diagnosis for each patient. Causation by Libby asbestos is established as part of the case-series by the physician investigator.

Also, in the ATS (2004) diagnostic criteria, "other exposures" are considered, and the diagnosis must include "exclusion of alternative plausible causes for the findings." The accumulation of over 1,500 diagnoses of asbestos-related disease from exposure to Libby asbestos certainly may form the basis for a conclusion that there was sufficient exposure to Libby asbestos to cause disease. This is a proper epidemiologic conclusion for a population that is both occupationally and environmentally exposed.

## 10. Lung Cancer (Dr. Moolgavkar, p.4).

a. **"Internal controls."** It is unclear what Moolgavkar means by "internal controls." Last (2001) A Dictionary of Epidemiology, for example, has no entry for internal controls. Perhaps this is a term from outside epidemiology. The Cox model or Proportional Hazards model, is defined by Last (2001) as "A statistical model in SURVIVAL ANALYSIS developed by D.R. Cox in 1972 asserting that the effect of the study factors on the HAZARD RATE in the study population is multiplicative and does not change over time." Its purpose is to be a multivariate form of survival analysis beyond the simpler Kaplan-Meier curves, specifically for censored data.

b. **Largely guesswork.** Moolgavkar, p.4, calculates a "Libby potency factor for lung cancer,  $kl=0.0026$ . Moolgavkar relies on exposure estimates done by Amandus et al (1987), "The Morbidity and Mortality of Vermiculite Miners and Millers Exposed to Tremolite - Actinolite - Exposure Estimates," Am J Ind Med 11:1-14. Exposure estimates are stated at Table 7. They are estimates only. At page 6, the authors state: "Assumptions were based on NIOSH experience and the company staff's judgment as to the level of exposure in an LO (location-operation) relative to other LOs or to the dry mill." The authors call many of the numbers "guesstimates." McDonald (2004), p.364, states that exposure estimates at the Libby mine "inevitably entailed many assumptions." Dr. McDonald states "the estimates of exposure many years (10-50 years) earlier from scanty environmental data is largely guesswork." See Sebastian et al, Ann Occup Hyg 32:201 (1988). Exposure estimates done retroactively for decades long past cannot be reliable. They cannot form the basis for detailed epidemiologic conclusions. Dr. Moolgavkar cannot rely on them. Also, Amandus and Wheeler (1987) in Part II of their study The Morbidity and Mortality of Vermiculite Miners and Millers exposed to Tremolite-Actinolite (American Journal of Industrial Medicine, 1987; 11(1):15-26) are specific in the abstract of their paper that "Results indicated that mortality from nonmalignant respiratory disease (NMRD) and lung cancer was significantly increased compared to the U.S. white male population."

#### 11. Mesothelioma (Dr. Moolgavkar, p.5).

Moolgavkar, p.5, states: "We are able to (compute the potency for Libby fibers) based on the Sullivan data set. Sullivan reports that there are 15 mesotheliomas in the updated Libby cohort. Using this number and the detailed exposure history of each member of the cohort . . ." First, Moolgavkar has not disclosed the Sullivan data set, exposure histories and other information he used in the calculation, so I am not in a position to comment on it.

In Sullivan (2007), the close of data was end of 2001. Since that time,

death certificates show five more former Grace workers died of mesothelioma, (Davidson, Ferguson, Hansen, Nicholls, and Skramstad), and one is alive with mesothelioma (Chappel). Exhibit 9 to Dr. Whitehouse Report 12/29/08. Dr. Moolgavkar has not used current information.

Moolgavkar, p.5, is in error when he adds 31 mesothelioma cases to the 11 mesotheliomas in Whitehouse (2008) for a total of 42. The 31 verified mesotheliomas are listed at Exhibit 9 to Dr. Whitehouse Report 12/29/08.

**12. Non-malignant respiratory disease (NMRD) Dr. Moolgavkar, p.6.**

Moolgavkar, p.6, states "It is not possible to compare the potency of (the) Libby fiber for NMRD.

**13. The Whitehouse study (Dr. Moolgavkar, p.6) Whitehouse (2004).**

a. **Exposure level.** Moolgavkar, p.6, states: "The most serious problem with the study is that Dr. Whitehouse makes no attempt to relate decrements in lung function to the level of asbestos exposure in his study population." This is a problem for the single minded. Few papers address dose/response. Most asbestos studies do not exam exposure levels. Most treating doctors focus on the disease process once it is underway. Whitehouse (2004) is a perfectly acceptable descriptive epidemiologic study.

b. **Randomness.** Moolgavkar, p.7, item 1, objects that subjects "were not randomly chosen," and are "not representative of the general Libby population." Dr. Whitehouse has clarified that the study is representative of the asbestos disease population, not the general population of Libby. Libby Expert's Response to Grace's Dr. Moolgavkar, 5/8/07, p.8. Moolgavkar ignores this.

In a descriptive epidemiologic study, subjects need not be randomly chosen. Most epidemiology studies are descriptive, and most do not involve random selection. Most studies are either case series, population based, or selected cohorts from various registries, not random samples of subjects from the general population of a town or larger area.

Moolgavkar, p.7, item 1, objects that there was "no control group." This statement reveals a lack of understanding of pulmonary function testing. Pulmonary function norms are set in large studies. The "percentage predicted" is the percent of "normal" for a subject based upon age, height, race, and gender from large studies, which present a large control group.

c. **Two data points.** Moolgavkar, p.7, item 2, states: "Dr. Whitehouse does not use the most appropriate statistical methods." Moolgavkar states that Dr. Whitehouse should have used all data points in lieu of just two data points, first and last pulmonary function test. With 123 subjects, the use of two data points is statistically sound to a high degree of certainty. Once 30 subjects is exceeded in a study, the statistical validity of observations may go from sufficient to high degrees of certainty. 123 is a high number of subjects.

Secondly, for longitudinal studies of lung function loss due to asbestos exposure, use of two data points is common. See Jones (1989) (two data points 1973 and 1980), Ohlson (1985) (two data points 1976 and 1980), Siracusa (1984) (two data points 1966 and 1972), Murphy (1971, 1978) (two data points 1966 and 1972), Rom (1992) (mean of three data points), Whitehouse (2004) (two data points, first and last).

d. **ANOVA.** Moolgavkar, p.7, item 3, states: "Dr. Whitehouse uses (the ANOVA statistical) method incorrectly." However, the only basis Moolgavkar offers for this statement is that "Dr. Whitehouse does not say how the Effect of age can be adjusted using these normative values." The use of pulmonary function test norms and percentage predicted is elementary to a physician familiar with lung function testing. Moolgavkar objects that Whitehouse (2004) does not present the "actual regression equation." It is **certainly** not standard practice to do so.

e. **Regressions.** Moolgavkar, p.7, items 2 and 4, states that Whitehouse (2004) should have performed a linear regression "in which pulmonary capacity is modeled as a function of covariates such as age, gender, smoking history, obesity, radiographic changes, pleural thickening, and most importantly history of exposure to asbestos."

Age and gender are controlled in the pulmonary function testing norms.

Dr. Whitehouse has reported in the 5/8/07 response to Dr. Moolgavkar's report, p.9, that "smoking was not a confounding variable. Dr. Whitehouse, as part of the peer review process before publication, did perform the calculation. Results showed that smokers do not have greater lung function loss than never smokers, and therefore smoking was not a confounding variable." In any event, there were only eight of 123 subjects in Whitehouse (2004) who were current smokers. This is too small a number for statically significant results.

As to obesity, Whitehouse (2004), p.221 states "over the course of the study group observation, average BMI increased less than 1kg/m<sup>2</sup> and there was



no statistical correlation between the increasing BMI and loss of lung function.

As to the extent of pleural changes and their effect on lung function, Whitehouse (2004), p.223, reports that the analysis was done:

Extent of pleural changes as measured as described on the chest x-ray was evaluated in relation to the loss of lung function. There was no statistical correlation between the extent of pleural changes measured on the chest x-ray and loss of pulmonary function.

As to any correlation with "asbestos exposure," all subjects had exposure to Libby asbestos. This was a necessary finding in the diagnosis of asbestos-related disease in the first place.

Furthermore Rothman (2001) in Teaching Epidemiology notes at page 73: "multivariate analysis is helpful to achieve various analytic ends, but its problems are often understated . . . my teaching emphases caution in respect to multivariate models, which have more pitfalls than stratified analysis, but have become fashionable, presumably because the technology allows such analyses to be conducted more readily."

f. **PFT machines.** Moolgavkar, p.8, item 5 states that Whitehouse (2004) does not indicate "the number of patients whose initial and final measurements were made on different machines and whether any attempt was made to cross calibrate the machines." Dr. Whitehouse has reported in the Response to Dr. Moolgavkar Report, 5/8/07, p.9, that: "this criticism is of no importance. If properly calibrated, different machines should produce reasonably uniform results. American Thoracic Society (1991), "Lung Function Testing: Selection of Reference Values and Interpretative Strategies," Am Rev Respir Dis 144:1202-1218, gives mention to "between instrument variation," but does not find such variation significant.

The AMA Guides to Evaluation of Permanent Impairment, 5<sup>th</sup> Ed., offer nationwide standards for lung function impairment. In the Guides, all pulmonary function test sheets are subject to uniform norms, regardless of manufacturer. As a matter of standard practice, pulmonologists use the same norms for all equipment, regardless of manufacturer."

g. **Forced vital capacity.** Moolgavkar, p.8, states "Dr. Whitehouse does not explain how he chose the best available and valid number" for forced vital capacity. Dr. Whitehouse, in the Response to Dr. Moolgavkar Report, 5/8/07, reports that chest physicians understand that there are standard

methods, universally followed, as published by the American Thoracic Society. Such an explanation does not belong in an article on lung function.

**h. A math error.** Moolgavkar, p.8, seems to think that the Whitehouse (2004) average loss of 3.2% per year among 94 patients is not consistent with an average loss of 3.6% for the 79 patients with over 1% loss. There is nothing inconsistent in the numbers. Moolgavkar's observation presents a math error.

**i. Residents.** Moolgavkar, p.8, states that Whitehouse (2004) "does not provide the information that would be required to determine to what extent loss of lung function among residents of Libby is attributable to their asbestos exposure." Moolgavkar's assertion misunderstands the point of the study. First, the study is on 123 subjects who are representative of the asbestos disease population. The study does not seek to determine what the extent of loss of lung function may be "among residents of Libby." The study does determine loss of lung function due to asbestos exposure in the 123 subjects with two lung function tests. Their common thread is a diagnosis of asbestos disease. As noted above, alternative plausible causes for the lung function loss were ruled out. There is no evidence that the loss of lung function was due to other causes. Dr. Moolgavkar and other Grace experts have had access to the 123 subjects' lung function data for three years, and present no analysis which shows another cause other than asbestos exposure. In diagnosing the 123 patients, Dr. Whitehouse ruled out "alternative plausible causes for the findings." ATS (2004), Official Statement, p.691.

#### **14. The ATSDR Mortality Study (Dr. Moolgavkar, p.9).**

The study is ATSDR (2002), "Health Consultation - Mortality in Libby, Montana (1979-1998)."

**a. Lung cancer deaths.** Moolgavkar, p.9, states: "Inclusion of these 50 lung cancer deaths in the revised analyses does not appear to be scientifically defensible." ATSDR's case finding appears to be an attempt to be scientifically complete and thorough.

**b. Not by chance.** Moolgavkar, p.10, states: "Even if one mesothelioma death occurred in an individual not occupationally exposed, a single death could have occurred by chance." Perhaps, but this does not detract from the fact that many other deaths occurred as a result of occupational and/or environmental exposure to Libby asbestos.

**c. Environmental deaths.** Moolgavkar, p.11, states: "There is no

evidence that environmental exposures contributed to the death from pneumoconiosis.

This is an unqualified statement. Perhaps Dr. Moolgavkar means that ATSDR (2002) provides no such evidence. However, as demonstrated above such a conclusion would be epidemiologically incorrect. It appears that the statement is intended to be unqualified, since similarly unqualified statements appear elsewhere in the report. "There is no evidence to suggest that Libby fibers are any more toxic than other asbestos fibers," p.12. "The potency factors for Libby fibers indicate also that Libby fibers are considerably less toxic than crocidolite," pp.12-13.

Moolgavkar makes sweeping statements based on data that is much as 10 years out of date. Moolgavkar officially recognizes only one environmental mesothelioma. Though Moolgavkar, p.5, mentions the 11 additional environmental mesotheliomas in Whitehouse (2008), he does not use them in any calculations. By any comparison, the number of mesotheliomas in a population this small is excessive.

As to environmental "asbestosis" deaths (ICD9-501), Moolgavkar uses only one such death (Margaret Vatland). Since 1998, CARD mortality study death certificates show 34 such deaths, with 50 per best available information review of medical records. See Whitehouse report, 12/29/08, Exh. 7 and listed spreadsheets. Once again, by any comparison, the number of asbestosis deaths in a population this small is excessive. It should be noted that Moolgavkar has been provided with death certificates, but oddly he is not applying them to these comparisons.

#### **15. The ATSDR medical testing study (Dr. Moolgavkar, p.11).**

The study is Peipins et al (2003), "Radiographic Abnormalities and Exposure to Asbestos-Contained Vermiculite in the Community of Libby, Montana, USA," Environ Health Persp 111(14) 1753-59.

**a. A fine epidemiologic study.** Moolgavkar, p.11, states that Peipins et al (2003) is "not a proper epidemiologic study because the participants were self-selected and there was no control group." There are basically two types of epidemiologic studies, descriptive epidemiology and analytic epidemiology, as described above. Descriptive studies may be self-selected. The potential bias is disclosed. Descriptive studies may be performed on a cohort without a specific control group. Peipins et al (2003) is a proper descriptive epidemiologic study. It is what Last (2001) refers to as a population based study – "Pertaining to a

general population defined by geopolitical boundaries; this population is the denominator and/or the sampling frame." Peipins sampled well over 61% of the population of Libby and Central Lincoln County. This is very reasonable for a population based study.

**b. A population based study.** Moolgavkar, p.11, item 1, states that because "the study group was self-selected . . . the study subjects cannot be considered to be representative of the general population of the Libby area." Peipins (2003) describes the ATSDR screening process for Libby. The study found 18% of participants had pleural abnormalities, a very high percentage. Peipins (2003) acknowledges that there was outreach for the study, that the participants were volunteers and that there was a problem of "self-selection of participants," which may over represent the "worried well" of the community. Peipins (2003) answers the concerns as follows at p.1758:

Nevertheless, the medical testing program screened 7,307 people in Libby and the surrounding area. Of those, 5,846 were from the Libby area. This represents a substantial portion (61%) of the 9,521 persons in central Lincoln County - a population that has been relatively stable for the past 30 years (U.S. Bureau of the Census 2002).

If a majority of a population is screened, it would be an example of a population based study. With such a large number of participants, even if none of the remaining non-participants had pleural abnormalities, the rate of abnormalities for the Libby area is still about 12% which is significantly in excess of the norm. Since 61% of the general population was screened, the study certainly provides strong evidence of an association between environmental exposure to Libby fibers and radiographic abnormalities. In the United States it is unusual to get a 61% response for screening purposes in a population.

**c. Blinded.** Moolgavkar, p.11, item 2, states that "the x-ray readers were not blinded to the source of the plates, and no control plates were used." Moolgavkar considers this a "significant limitation" compromising any use of the study. Peipins et al (2003), p.1758, explains that chest x-ray readers had no information on the participants, other than that they were in the Libby study. They had no information on their exposure status. In published studies, chest x-ray readers often know the source of the chest x-rays in the study. Their training and procedures ensure proper results. The procedure obviously did not compromise the study. It was properly published.

**d. Control group.** Moolgavkar, p.12, item 3, objects that "there was

no control group so that a background rate for radiographic changes could not be established." Dr. Whitehouse has responded that a background rate of 2-4% for pleural abnormalities is well accepted.

In fact, one cannot construct a control group from within the Libby area. Peipins (2003), p.1758, states: "Given the ubiquitous nature of vermiculite contamination in Libby, along with historical evidence of elevated asbestos concentrations in the air, it would be difficult to find participants who could be characterized as unexposed." Accordingly, Peipins, et al (2003), p.1757, references studies indicating a 2-4% background rate for pleural abnormalities. The text Fraser and Pare, Diagnosis of Diseases of the Chest, 4<sup>th</sup> Ed. 1999, p.2799, states: "In a review of radiographs of 105,064 civilian and military employees of the U.S. Navy, 1,914 (1.8%) were interpreted as definitely showing pleural plaques. (31)." This is consistent with the background rate at 2-4% for pleural abnormalities. The background rate is properly established for this epidemiologic study.

e. **Conclusion.** Moolgavkar, p.11, asserts that the above "significant limitations . . . preclude any conclusions regarding associations between environmental exposure to Libby amphibole and abnormalities on chest x-rays." The three limitations discussed by Moolgavkar (self-selection, not blinded, and no control group) certainly do not preclude use of the Peipins et al (2003) study in drawing conclusions regarding associations between environmental exposure to Libby amphibole and abnormalities on chest x-rays. The Peipins et al (2003) study is a classic example of population-based descriptive epidemiology.

f. **McDonald et al (1988).** Moolgavkar, p.12, states that: "McDonald et al (1988) found no increase in radiographic abnormalities over controls in a cohort of vermiculite miners exposed to small amounts of fibrous tremolite." This was a study in South Carolina. There was no indication that the fiber was the same as Libby asbestos.

## **RESPONSE OF DR. CRAIG MOLGAARD, TO REPORT OF DR. HOWARD ORY, 4/6/09**

### **CARD Mortality Study.**

1. **Selection process.** Ory, p.8, asserts that "there is no defined section process" and "this is not an epidemiologically valid approach." Ory misreads the selection process description, and wonders if every patient Dr. Whitehouse has seen has died! The Whitehouse Report 12/29/08, ¶ 31, clearly

states that "227 patients were identified as deceased through 7/9/08." There was no statement that all patients were tracked to establish whether or not they had died. This is not essential. There is no reason that any "unknown" death would be more or less likely to have died of asbestos-related disease. Dr. Ory's criticisms stem from not having read the study description carefully. This is a valid epidemiological approach because it meets the definition of what Last (2001), Dictionary of Epidemiology (4<sup>th</sup> Ed.) defines as a case-only study, a form of descriptive epidemiology.

Ory, p.8, states: "Dr. Whitehouse makes no attempt to validly define exposure to Libby vermiculite." A Libby asbestos exposure sufficient for "evidence of causation by asbestos" is a part of each diagnosis. Patients diagnosed and now deceased comprise the case series study. Libby exposures are discussed in other sections of the Whitehouse Report. While more of the background information for the report will need to appear in a formal publication of the study, there is nothing in the selection process which would render the study epidemiologically invalid.

**2. Cohort of patients diagnosed.** Ory, p.9, states that the 186 patients Dr. Whitehouse reports on are "not representative of the Libby population in general." This is a false issue. No such claim is made in the CARD mortality study description. The study sample is patients diagnosed with asbestos related disease, not the Libby population in general.

**3. Not "solely" environmentally exposed.** Ory, p.10, claims to have read ATSDR (Aug. 2002), "Review of Asbestos Related Abnormalities Among a Group of Patients From Libby, Montana - A Pilot Study of "Environmental Cases - Final Report." Ory, p.10, states: "ATSDR only confirmed approximately one-third of the cases that Dr. Whitehouse describes as being solely environmentally exposed cases as having no occupational exposure to asbestos." Ory's statement is in error. The cases were never described as "solely environmentally exposed." Dr. Whitehouse submitted potential environmental cases to the ATSDR for further review. ATSDR (Aug. 2002), p.5, states that the group identified by Dr. Whitehouse had "never been employed by the vermiculite mine." The description did not say that patients had never had other occupational exposures in Libby. The ATSDR performed detailed interviews. It found that of the 22 cases, three had had household contacts with miners, five had been secondary contractors at the mine, and two had both. Also, the ATSDR found that four others had been exposed to commercial asbestos from non-vermiculite sources, (p.8).

Ory, p.10, commits another significant error. Ory states: "Far fewer than

66% that Dr. Whitehouse reports in sub-paragraph one were exposed to asbestos solely through environmental exposure." Again we see the word "solely." Nowhere in the Whitehouse Report 12/29/08, ¶ 31(1) can one find the statement "solely through environmental exposure." ¶ 31(1) simply separates mine workers (34%) from community members and family members of miners. (66%).

**4. An average 7.5 years of life is lost.** Ory, p.12, states: "The age of death in subjects in the CARD mortality data does not appear to be unusual." It does appear to be unusual, if asbestos patients are losing approximately 7.5 years each off their life spans. The issue is how long the patients would have lived had they not been diagnosed with asbestos-related disease.

Whitehouse Report, 12/29/08. (Note ¶ 31(9) states: "Mean age at diagnosis was 69.4. Mean age at death was 76.3. Based upon male life expectancy at diagnosis, an average 7.5 years of life expectancy was lost to asbestos disease." For this we use the life table referenced on Exhibit 5 Whitehouse Report, 12/29/08 (note life expectancy for a white male age 55 is 79.6. Ory used 76.8 for "55 and over." There is a difference here).

In terms of the insulators dying 10 years younger than the 79 subjects deaths in the CARD mortality study, we note that the 79 non-malignant deaths include a significant number of females, with a different pattern of exposure compared to the insulators. In general, it is not surprising from the epidemiologic point of view that different occupational groups with different patterns of exposure to different types of asbestos fiber have somewhat different patterns of mortality. What would be surprising would be if the mortality patterns were very similar. Note that certain minor changes were made in the CARD mortality study for the May 2009 Dr. Whitehouse Report. There are now 76 non-malignant deaths. The comparisons made at ¶ 32, Whitehouse Report May 2009 are epidemiologically sound.

**5. Death rate.** The Whitehouse Report 12/29/08, ¶ 32, states: "The 62% death rate from asbestos disease appears to be the highest reported for any cohort in the United States." Ory, p.13, responds: "This statement is logically impossible because, as noted above, the CARD mortality data contains only dead subjects." Ory does not understand that Markowitz et al (1997), Table 2, also reports only dead subjects. Ory apparently does not understand that two cohorts of subjects with asbestos disease, with both cohorts now all deceased, can be compared as to the percentage of each cohort that died of asbestos related disease. This is the comparison made between the CARD 79 non-malignant deaths and the 74 non-malignant deaths in Markowitz et al (1997),

Table 2. Epidemiologically, this comparison could lead to a form of what Last (2001) considers to be a proportionate mortality ratio. Incidentally, we find no U.S. cohort diagnosed or undiagnosed which exceeds the 59% rate for death by non-malignant asbestos-related disease in the CARD mortality study.

### **ATSDR (2002) Mortality Study.**

6. Ory, p.16, reviews the problems with the ATSDR (2002) study.

(1) **Death Certificates alone.** Many mortality studies rely on death certificates alone, and share the problems of that method, most of which center around underreporting of specific diseases or conditions. Selikoff and Seidman (1992), Table II, compare the use of death certificates alone to the use of medical records and best available information, and find that death certificates underreport "asbestosis" by 53% (201/427).

(2) **COPD.** When Dr. Whitehouse testifies about misclassification as COPD, he testifies from experience with deaths among Libby asbestos disease patients.

(3) **Primary cause.** Ory, p.17, states: "Dr. Whitehouse's third criticism of the ATSDR mortality study correctly notes that the ATSDR only looked at primarily cause of death and did not consider underlying conditions." ATSDR (2002), p.5, apparently only looked at "primary underlying cause," not all underlying causes. The statement of case definition and case finding is not clear. If the ATSDR only considered the top cause on the death certificate, then asbestosis deaths are significantly understated.

Ory, p.17, presents another error. In discussion of ATSDR (2002) study of mortality for Central Lincoln County, Ory states "in order to get to the 40 to 60% deaths attributable to asbestosis that Dr. Whitehouse claims, all respiratory deaths would have to be asbestosis." Ory provides no reference for this "claim." The Whitehouse Report makes no such claim as to the ATSDR study or the population of Central Lincoln County. The death rate of 62% by asbestos disease was for the group already diagnosed with asbestos-related disease, not for all citizens.

(4) **Out of State deaths.** Ory, p.18, presents another error. Ory writes:

Dr. Whitehouse's fourth criticism, that the ATSDR only collected death certificates for people who were Libby residents at the time of death, simply is not



true. On page 2 of the August 2002 ATSDR mortality study, it states "for those Libby residents dying outside of Montana, death certificates were sought from their respective states . . .

Dr. Ory did not understand that some Libby residents died out-of-state. ATSDR (2002), p.4 explains:

MDPHHS provided paper copies of death certificates for most decedents documenting Libby as their place of residence at the time of death and dying of one of the selected underlying causes. The majority of deaths occurred in Montana (88%, 477/542) with a few Libby residents dying outside the State (12%, 65/542).

(5) **Cut off date 1998.** Another major shortcoming with ATSDR (2002) is that its cut off date for data was 1998. Since 1998, from the CARD mortality study alone, there have been six mesothelioma deaths (five miners), 11 lung cancer deaths (two miners), and 56 "asbestosis" deaths (24 miners).<sup>a</sup> See Whitehouse Report 12/29/08, Exhibit 7 "Summary of Mortality Study Disease Percentages," and spreadsheets listed for Exhibit 7.

#### **Asbestosis in the ATSDR mortality cohort compared to CARD mortality data.**

7. **Attempts to compare.** Ory, p.18, attempts to compare the two studies. Ory trips over apples and oranges. First, the ATSDR (2002) study used data through 1998, whereas the CARD mortality study used data through 7/9/08. This is a 10 year difference. Second, ATSDR (2002) considered all deaths in Central Lincoln County, whereas the CARD mortality study considered only deaths where there had earlier been a diagnosis of asbestos-related disease. The two studies are not comparable in the ways Dr. Ory attempts.

Ory, p. 19, points to "Dr. Whitehouse's claim that non-occupationally exposed Libby residents have dramatically high mortality from asbestosis." Ory gives no reference. No such statement is to be found in the Whitehouse Report. The CARD mortality study did not examine all "non-occupationally exposed Libby residents." See Dr. Whitehouse Report, 12/29/08, ¶ 31.

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<sup>a</sup>Two asbestosis deaths (Don Johnson and Don Riley) were subtracted because the deaths were before 1999. One mesothelioma death (Toni Riley) is subtracted, because the death was before 1999.

Ory, p. 19, points to ATSDR (2002), Table 8, presenting one asbestosis death. The title to the table indicates "excluding former workers." ATSDR (2002), p.10, explains that "former workers" means "former workers at the mining and milling facility." Ory misunderstands ATSDR (2002), as attributing "one death to asbestosis among people with no occupational exposure to asbestos." Ory is in error.

### **Comparisons of CARD data with Sullivan (2007).**

8. **Bizarre contentions.** This section requires little response. Dr. Ory, p.20, imagines contentions as follows:

Dr. Whitehouse's contention that Libby residents with scant environmental exposures have high risks of developing asbestosis.

Dr. Whitehouse's contention that individuals whose only exposures were light environmental exposures have risks of asbestosis greater than the very heavy exposed men in the insulators cohort.

Dr. Whitehouse's contention that the results of asbestos exposure in Libby are unique.

No quotes or references are given for these "contentions." The Whitehouse Report 12/29/08 makes no such contentions.

9. **Epidemiologically comparable.** Ory, p.20, disagrees that the Markowitz *et al* (1997) analysis of deaths in the insulators cohort is "epidemiologically comparable" to the CARD mortality study. Ory's opinion that the studies are not comparable is based upon objections to design of the CARD mortality study. As discussed above, the selection method was epidemiologically acceptable. Most studies are on volunteers. Subjects need not be followed over time, in fact cross-sectional and retrospective (case control, mortality, historical cohort) studies are common in epidemiology. Apparently a small number of the 186 in the study were referred by law firms. None of Ory's observations compromise the epidemiological status of the study.

Again Ory misreads the CARD mortality study. Ory, p.21, states: "The CARD mortality study required that they all be **exposed** to asbestos and dead." No quotes or references given. Instead, the Whitehouse Report 12/29/08, ¶ 31, states that the study required that subjects have "an asbestos related disease

diagnosis."

**10. "Solely" again.** Ory, p.22, believes the Whitehouse Report 12/29/08 says "all patients developed disease solely from their exposure to W.R. Grace vermiculite." The report does not so state.

**11. Representative.** At pages 22-25, Ory offers a number of criticisms of the Whitehouse (2004) publication. Most relate to Ory's misunderstanding of the article. In the materials reviewed, I find that in the Libby Experts' Response to Grace's Dr. Moolgavkar Report, 5/8/07, p.8, Dr. Whitehouse clarified that "representative" in Whitehouse (2004) means "representative of the Libby area asbestos disease population." Once this is understood, most of Dr. Ory's criticisms have no meaning. The paper obviously treats progression in asbestos pleural disease. It does not analyze demographic issues as Ory suggests.

Where Whitehouse (2004), p.220, speaks of the "491 patients in the clinical practice," the reader understands that these are 491 patents with asbestos disease, since that is what the article is about. One does not expect orthopedic patients in the 491.

## **RESPONSE OF DR. CRAIG MOLGAARD TO REPORT OF THE ACC's DR. L. WELCH, March 2009**

### **1. Cohort of diagnosed asbestos related disease (ARD) patients.**

Dr. Welch, p.2, states:

Dr. Whitehouse studied cause of death in a case series of patients, not a population based cohort. . . . Since his group of patients does not present the entire group of Libby residents, this analysis cannot be used to draw conclusions about asbestos-related mortality in the entire cohort of Libby.

A cohort of diagnosed ARD patients is a proper cohort in epidemiology. The CARD mortality study is a proper study in descriptive epidemiology. A Dictionary of Epidemiology, edited by John M. Last, 4<sup>th</sup> Ed., defines "epidemiology" as follows:

The study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to control of health problems.

A "descriptive study" is defined as follows:

A study concerned with and designed only to describe the existing distribution of variables, without regard to causal or other hypotheses.

As such, the CARD mortality study may properly be compared to other cohorts of patients diagnosed with ARD, such as a limited group of persons diagnosed with ARD and who died.

Comparability is the key aspect of the field of epidemiology. Epidemiologists always ask compared to what when looking at their data, whether the data is descriptive, analytic or clinical. Comparison may occur in terms of comparison populations, special groups, or controls per se. For example, Dr. Frank has determined that the CARD mortality study and the insulators cohort of 74 deaths by asbestosis at Markowitz et al (1997), Table 2, are medically comparable.

The CARD mortality study could be used to draw conclusions about asbestos-related mortality in the entire cohort of Libby, by simply assuming that in the entire cohort of Libby there were no additional ARD deaths which were not CARD mortality study deaths. This is a very conservative assumption of zero deaths in the rest of the cohort. The conclusion at Dr. Whitehouse Report 12/29/08 ¶ 44, that "Libby's mesothelioma rate is certainly the highest in the United States," is a proper conclusion. It is a proper epidemiologic conclusion because it rests on comparison with other available mesothelioma rates in the United States. This is how epidemiologists make judgments about excess occurrence of disease and excess occurrence of risk. It is standard practice in epidemiology and public health.

This line of reasoning is what allows the conclusion of the Dr. Whitehouse Report 12/29/08, ¶ 48, that "the Libby area has the highest asbestosis mortality in the United States."

The conclusion is based on comparing observed mortality in an area or group, to what one would normally expect for that area or group based on data from other populations. This is a very standard approach used in Occupational Epidemiology, the primary objective of which is "to identify hazardous workplace exposures to present occupational disease" (Pierce 2001) in Teaching Epidemiology (2<sup>nd</sup> Ed. 2001) Oxford University Press.

## **2. Death certificates.**

Dr. Welch, p.3, states: "Standard mortality analyses use the underlying cause of death as determined by a nosologist, someone specifically trained in determining cause of death." It is clear that not all standard mortality analyses use this procedure. A physician working within his area of expertise make determinations on cause of death and routinely does so in epidemiology studies. Many published epidemiologic studies include determinations on cause of death without use of a nosologist. Many use categories other than "underlying cause of death."

Welch, p.3, states: "The conditions listed in Part II of the death certificate are not generally used to determine cause of death." The method used in Sullivan (2007), "any mention" on the death certificate, is common. Most common is the use of any mention in the underlying cause section of the death certificate. For better comparability to the insulators studies, the CARD mortality study has been revisited to evaluate "primary cause" per best available information and "underlying cause" per death certificates.

## **3. Comparability of Libby and insulators' study.**

Welch, p.5, states: "I conclude that Dr. Whitehouse did not follow the methods described by Dr. Selikoff in his 1992 paper for the use of best evidence." Welch implies that the Libby studies and the insulators studies are not comparable. It is rare that epidemiologic studies use exactly the same methods. As Pierce (2001) in Teaching Epidemiology (2<sup>nd</sup> Ed. 2001) Oxford University Press, notes. "Despite the limitations of standardized mortality ratio (SMR) analyses using the general population as a comparison, this is usually the most practical option for initial analyses. However, alternative comparison populations (e.g., regional mortality rates, other employed workers) should also be considered."

One could assert that because the CARD doctors were treating physicians and actually examined all patients in the CARD mortality study, they had much better information than Selikoff et al, who used cold records. On the other hand, the CARD files often do not have all family physician and hospital documents. The CARD determinations may understate death due to ARD, because where there was sufficient uncertainty the death was not called out as an ARD death. The studies are comparable.

## **4. Percentage of ARD deaths.**

The Whitehouse Report 12/29/08, ¶ 31, reports 62% of deaths were due to ARD (malignant and non-malignant). Welch, p.5, erroneously states:

It appears that if an individual had a clinical diagnosis of "asbestosis" or asbestos-related pleural disease then Dr. Whitehouse considered his or her death an asbestos related death, even when the primary cause of death was (other diseases).

Dr. Welch's observation would lead to a 100% ARD death rate, which was not the case.

**5. Primary or underlying cause of death.**

At page 5, Dr. Welch writes: "These comparisons are not valid." With the re-evaluation described in #1 above, the comparisons are increasingly valid.

**6. Cross sectional data.**

Welch, p.8, seems to suggest that the Whitehouse (2004) study be disregarded, since it uses "cross sectional data." The vast majority of epidemiologic studies use cross sectional data. It is a perfectly valid approach, being one of the three basic designs of observational epidemiology (cross-sectional, case-control, cohort.) Kleinbaum, Kupper and Morgenstern, Epidemiologic Research, Wiley & Sons, 1982.

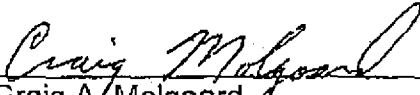
**7. Due solely to chance.**

Welch, p.12, writes:

A change of less than 15% in spirometry values, or a change of less than 9% in DLCO could be due to test to test variation. Dr. Whitehouse describes an average change of 6.4% in FVC, 6.8% in TLC, and 8.7% in DLCO over a three year period. Given the test to test variation in these parameters, this change could be due solely to chance.

Dr. Whitehouse and Dr. Frank have pointed out that the 15% and 9% points are incorrect. Even if the 15% FVC and the 9% DLCO could be correct, the three year lung function loss reported in Whitehouse (2004) could not be "due solely to chance." Dr. Welch omits to consider that the 15% and the 9% operate plus and minus, and that there are 123 subjects. The sample size is sufficiently large to stabilize the average estimate.

DATED this 18 day of May, 2009.

  
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Dr. Craig A. Molgaard

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146. Hawley, S.R., Hawley, G.C., Ablah, E., St. Romain, T., **Molgaard, C.A.**, Orr, S.A. Mental Health Emergency Preparedness: The Need for Training and Coordination at the State Level. Prehospital and Disaster Medicine, *In Press*.
147. Chesser, A., Ablah, E., Hawley, S., Wolfe, D., St. Romain, T., Grube, C., **Molgaard, C.A.** (2006). Preparedness Needs Assessment in a Rural State: Themes Derived from Focus Groups. Biosecurity and Bioterrorism, 4(4):376-383.
148. Hawley, S.R., Paschal, A.M., Ablah, E., St. Romain, T., Liow, K., **Molgaard, C.A.** (2007). Initial Perspectives from Midwestern Neurologist's: Epilepsy Patients' Barriers and Motivators for Seeking Treatment, Epilepsia 48(10):1920-1925.
149. St. Romain, T., Hawley, S.R., Ablah, E., Kabler, B.S., **Molgaard, C.A.** (2007). Tobacco Use in Silent Film: Precedents of Modern-Day Substance Use Portrayals. Journal of Community Health, 32:413-418.
150. Paschal, A.M., Hawley, S.R., St. Romain, T., Liow, K., **Molgaard, C.A.**, Sly, J., Sadler, T.L. (2007). Epilepsy Patients' Perceptions About Stigma, Education, and Awareness: Preliminary Responses Based on a Community Participatory Approach, Epilepsy and Behavior, 11:329-337.

#### **RECENT PRESENTATIONS**

1. Orr, S., **MOLGAARD, C.A.**, & Hawley, S.R. (2004). Kansas Public Health Leadership Institute. National Public Health Leadership Network 11th Annual Conference: Paper Presentation, Saint Louis, Missouri; April 21-23, 2004.
2. Cook, D., **MOLGAARD, C.A.**, Ablah, E., Fredrickson, D.D., Wetta-Hall, R., Jones, T.L., Chesser, A., & Chance, D. (2004). The University of Kansas Medical Center, Department of Health Technology Outreach: Response to Terror and Emerging Infections. Bethesda, Maryland; May 25-27, 2004.
3. Hawley, S.R., Orr, S., & **MOLGAARD, C.A.** (2004). Developing Community Partnerships and Social Capital through Leadership Training. Community Health Crossroads: Critical Issues in Community Based Research Partnerships: Poster Presentation, Hartford, CT; June 10-13, 2004.
4. Hawley, S.R., Orr, S., **MOLGAARD, C.A.**, Hall, G.C., Chesser, A., Jones, T.L., Paschal, A.M., & Gruhn, R. (2004). Disaster Management: Leadership Training and the Public Health Infrastructure. Third International Conference Promoting Global Health: Sharing Visions and Strategies: Poster Presentation, Topeka, Kansas; July 11-12, 2004.
5. Cook, D., **MOLGAARD, C.A.**, Ablah, E., Wetta-Hall, R., Fredrickson, D.D., Chance, D., Jones, T.L., Chesser, A., Davis, R.J., Grube, D., Skalacki, M., Smoot, R., & Warren, M.B. (2004). Kansas Response to Terrorism Training for Health Professionals: AHECs and Social Capital. Presented at the 2004 National AHEC Organization Conference from July 31 to August 4, 2004 Baltimore, Maryland.
6. Orr, S.A., **MOLGAARD, C.A.**, & Hawley, S.R. (2004). The Kansas Public Health Leadership Institute: An Important Step in Statewide Workforce Development. Kansas Public Health Association Conference: Poster Presentation, Topeka, Kansas; September 28-29, 2004.
7. Werder, S.F., Frazier, L.M., **MOLGAARD, C.A.**, Hawley, S.R., Pfeiffer, R., & Boyd, D. (2004). Resources for Managing Substance Abuse in Crawford County, KS: A Quantitative-Qualitative

Community Assessment Project. Submitted to: Kansas Public Health Association Conference: Poster Presentation, Topeka, Kansas; September 28-29, 2004.

8. Orr, S.A., **MOLGAARD, C.A.**, & Hawley, S.R. (2004). KPHLI and WALD Breakout Session. Kansas Public Health Association Conference: Poster Presentation, Topeka, Kansas; September 28-29, 2004.
  9. Ablah, E., Jones, T.L., **MOLGAARD, C.A.**, Fredrickson, D.D., Wetta-Hall, R., Chesser, A., Chance, D., & Cook, D. (2004). Evaluation of Anti-Terrorism Preparedness Among Kansas Health Professionals. Presented at the Annual Kansas Public Health Association Conference: Topeka, Kansas; September 28-29, 2004.
  10. Oler-Manske, J.E., Orr, S.A., **MOLGAARD, C.A.**, Hall, G.C., Gruhn, R., & Zackula-David, R. (2004). Kansas Chautauqua Project. American Public Health Association Conference: Poster Presentation, Washington, D.C.; November 2004.
  11. Cook, D., Wetta-Hall, R., Jones, T.L., Fredrickson, D.D., Ablah, E., Chance, D., & **MOLGAARD, C.A.** (2004). Terrorism Training in Kansas: Systems and Community Impact of a Statewide Training Program. American Public Health Association Conference: Poster Presentation, Washington, D.C.; November 2004.
  12. Cook, D., **MOLGAARD, C.A.**, Ablah, E., Wetta-Hall, R., Fredrickson, D.D., Chance, D., Chesser, A., Jones, T.J., Davis, R.J., Grube, D., Skalacki, M., Smoot, R., & Warren, M.B. (2004). Can It Happen in Kansas: Response to Terrorism and Emerging Infections. American Public Health Association Conference: Paper Presentation, Washington, D.C.; November 2004.
  13. Hawley, S.R., Orr, S.A., **MOLGAARD, C.A.**, Hall, G.C., Chesser, A., Jones, T.L., Paschal, A.M., & Gruhn, R. (2004). Leadership in Disquieting Times: Training Across Professional Boundaries. American Public Health Association Conference: Paper Presentation, Washington, D.C.; November 2004.
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14. Johnston, J., Ablah, E., Chesser, A., Scanlan, T., **MOLGAARD, C.A.** (2004). Walkin' Wichita: Addressing the built environment and sedentary lifestyle. Kansas Public Health Association Conference: Poster Presentation, Topeka, KS; September 28-29, 2004.
  15. Ablah, E., Jones, T.L., **MOLGAARD, C.A.**, Fredrickson, D.D., Wetta-Hall, R., Chesser, A., Chance, D., Cook, D. (2004). Evaluation of Kansas health professionals in anti-terrorism preparedness. Kansas Public Health Association Conference: Poster Presentation, Topeka, KS; September 28-29, 2004.
  16. Saville, S., Wetta-Hall, R., **MOLGAARD, C.**, Hawley, S. (2005). A cross-sectional study of an evaluation of knowledge and attitudes about asthma among childcare providers. Dental Public Health Seminar Series: Oral Presentation, San Francisco, CA; April 5, 2005.
  17. Saville, S., Wetta-Hall, R., **MOLGAARD, C.**, Hawley, S. (2005). A cross-sectional study of an evaluation of knowledge and attitudes about asthma among childcare providers. National Oral Health Conference: Pre-session Oral Presentation, Pittsburgh, PA; May 1, 2005.

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**GRANTS/CONTRACTS/AWARDS: (Principal Investigator)**

<b>Years</b>	<b>Title</b>	<b>Source</b>	<b>Amount</b>
1985	ALS and Heavy Metal Exposure	Faculty Research Award, College of Health and Human Services, San Diego State University	\$1,000
1986	Meritorious Performance and Professional Promise Award	San Diego State University	\$2,500
1987	Meritorious Performance and Professional Promise Award	San Diego State University	\$2,500
1986-1987	Occupational Risk Assessment for Adverse Reproductive Outcomes	March of Dimes Birth Defects Foundation, March of Dimes	\$24,000
1988	Microcomputer Station	Basic Science Research Grant, NIH	\$950
1988	Meritorious Performance and Professional Promise Award	San Diego State University	\$2,500
1989	Meritorious Performance and Professional Promise Award	San Diego State University	\$2,500
1989	San Pasqual Reproductive Epidemiology Survey	Environmental Protection Agency and State of California	\$39,200
1990	Meritorious Performance and Professional Promise Award	San Diego State University	\$2,500
1990	Microcomputer and Fax Station	Basic Science Research Grant, National Institute of Health	\$8,000
1990	AIDS Dementia	Research, Scholarship, and Creative Activity Award, California State University System	\$5,000
1987-1990	Seroprevalence of HTLV-I Among U.S. Marines Stationed in a Hyperendemic Area	Army Research and Development Command, U.S. Army	\$48,000
1986-1990	San Diego Epidemiology Project San Diego Total Resource Recovery Program	Environmental Protection Agency and State of California	\$550,000
1991-1992	HIV Seroconversion in the U.S. Navy	Naval Health Research Center, U.S. Navy	\$15,000
1992	The Epidemiology of Overuse Syndromes in the U.S. Navy	Naval Health Research Center, U.S. Navy	\$3,900
1992-1993	Comparison of Physical Therapy	Naval Health Research	\$5,000



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	Treatments of Iliotibian Band Syndrome and Overuse Syndromes	Center, U.S. Navy	
1992-1993	Neural Shifts and the Epidemiology of Migraine	Glaxo, Inc.	\$136,280
1993	The Epidemiology of Tuberculosis	Research, Scholarship, and Creative Activity Award, California State University	\$4,124
1993-1995	California Chamorro Cohort Project	National Institute of Aging	\$159,167
1993-1996	Epidemiologic Surveillance of Lead Exposure in Children	State of California	\$403,375
1995	Evaluation and Management of Sexually Transmitted Diseases in Benin	Hansen International Institute San Diego State University	\$2,000
1995-1997	Lead Poisoning Prevention	Centers for Disease Control and Prevention	\$355,000
1995-1997	California Distance Learning Project	State of California	\$772,944
1997-1998	Quality Improvement Studies	Heartland Health, Inc.	\$28,450
1998	Medicaid Patient Access Survey	Heartland Health, Inc.	\$22,712
1998	Indigent Health Care Fellowship	McPherson County Area Health Council	\$4,000
1998	Davis Faculty Development Scholarship	Kansas Health Foundation	\$3,000
1998-2004	Master of Public Health Student Scholarships	Kansas Health Foundation	\$5,000
1998	Master of Public Health Degree Program	Kansas Health Foundation	\$587,000
1998-2002	Evaluation Component of the Behavioral Risk Data Project	Kansas Health Foundation	\$42,000
1998-1999	Epidemiology of Injury and Its Prevention in Wichita, Kansas	Safe Communities Coalition/ Department of Transportation	\$36,240
1999	Livable Communities GIS	ESRI	\$7,000
2000	Child Care Association Community Assessment	Child Care Association	\$2,800
1999-2001	Polypharmacy Among Veterans Administration Patients	Via Christi Research Institute	\$100,000
1999-2008	Kansas Public Health Leadership	Centers for Disease Control	\$142,875

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2003-2004	WALD Center-Chautauqua Project	KDHE	\$25,000
2002-2009	Workforce and Leadership Development-WALD Center	St. Louis University/ Centers for Disease Control/HRSA	\$225,000
2002-2007	Kansas Public Health Leadership	Kansas Health Foundation	\$490,000
2003-2008	Kansas Bioterrorism Preparedness Training Evaluation	HRSA	\$296,346
2005	Informatics Assessment	Kansas Association of Local Health Departments (KALHD)	\$18,000
2005	Incident Command System Workshops	Kansas Association of Local Health Departments (KALHD)	\$21,000
2005-2006	Preparedness Evaluation Projects	Kansas Department of Health and Environment (KDHE)	\$150,000

**GRANTS/CONTRACTS/AWARDS: (Co-Investigator)**

<b>Years</b>	<b>Title</b>	<b>Source</b>	<b>Amount</b>
1981-1984	Teratogenic Effects of Low Dose Maternal Radiation (L. Kurland, P.I.) Department of Medical Statistics and Epidemiology, Mayo Clinic	Environmental Protection Agency	\$450,000
1981-1986	Rochester Neuroepidemiology Program Project (L. Kurland, P.I.) Department of Medical Statistics and Epidemiology, Mayo Clinic	National Institute of Neurologic Communicative Disorder & Stroke	\$700,000
1985-1990	Health & Functional Dependency of the Minority Aged (P. Stanford, P.I.) University Center on Aging San Diego State University	National Institute of Aging and National Institute of Mental Health	\$816,000
1986-1989	Maternal Pesticide Exposure and Pregnancy Outcome (W. Willis, P.I.) Division of Maternal and Child Health Graduate School of Public Health San Diego State University	The Maternal & Child Health & Crippled Children Services Research Grant Program	\$465,000
1987-1988	A Bi-National Effort for Preventing Tobacco Use in Tijuana Public Schools (John Elder, P.I.) Division of Health Promotion Graduate School of Public Health San Diego State University	Cowell Foundation	\$7,490
1987-1992	Project SHOUT-Student Helping Others to Understand Tobacco (John Elder, P.I.) Graduate School of Public Health	National Cancer Institute	\$1,400,000

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	San Diego State University		
1988-1993	SANDIOC – San Diego and Imperial Counties Organization for Cancer Control (Sidney Salzstein, P.I.) Department of Pathology School of Medicine University of California, San Diego	California Health Foundation, State of California	\$2,100,000
1989-1990	Health Status/Lifestyles of Asians, Pacific Islanders, and American Indians (E. Percil Stanford, P.I.) University Center on Aging San Diego State University	American Association of Retired Persons, Andrus Foundation	\$50,000
1990-1993	Experimental Approach to Tobacco Control for High-Risk Teens (John Elder, P.I.) Graduate School of Public Health San Diego State University	University of California, Berkeley Tobacco Related Research Program	\$654,152
1992	Preliminary Assessment: Exposure to Electromagnetic Fields and Brain Tumors (Louise Hofherr, P.I.) Graduate School of Public Health San Diego State University	San Diego Gas and Electric	\$46,112
1993-1996	HIV/AIDS Among Native Americans (Jean Pickus, P.I.) Southern Indian Health Council	California Wellness Foundation	\$380,000
1995-1996	Latino Immunization Project (F. Scutchfield, P.I.) Graduate School of Public Health San Diego State University	California State Health Department	\$1,500,000
1997-1998	Healthcare Provider Assessment Survey (L.M. Frazier, P.I.)	Heartland Health, Inc.	\$11,900
1997-1998	Member Satisfaction Studies (D.D. Fredrickson, P.I.)	Heartland Health, Inc.	\$32,460
1997-1999	Sedgwick County Community Improvement Health Plan (S. Edwards Dismuke, P.I.)	Kansas Health Foundation	\$300,000
1998-1999	Turning Point Initiative (G. Mitchell, P.I.)	Robert Wood Johnson/ Kellogg Foundations	\$600,000
1998-2001	MPH Faculty Development Grant (J. Hagemaster, P.I.)	SAMHSA	\$300,000
2000	Environmental Health and Human Development: An Overview (L.M. Frazier, P.I.)	EPA	\$100,000
2001	Kansas Medicaid and SCHIP	Kansas Children's Service	\$180,000

	Disenrollment Evaluation (D.D. Fredrickson, P.I.)	League	
2003-2004	Regional Public Health-Medicine Educational Center (L.M. Frazier, P.I.)	Association of American Medical Colleges and the Centers for Disease Control and Prevention	\$49,999
2005-2008	Columbia University Emergency Preparedness (E. Ablah, P.I.)	HRSA	\$419,580
2005-2007	Best Immunization Practices (A. Paschal, P.I.)	Kansas Association of Local Health Departments	\$140,000

**COURSES TAUGHT:\***

Behavioral & Social Science in Public Health  
Epidemiological Basis for Disease Control  
Epidemiology Methods  
Field Placement in Epidemiology  
History and Theory of Epidemiology  
Neuroepidemiology  
Social and Behavioral Epidemiology

Doctoral Research in Epidemiology  
Epidemiology of Chronic Diseases  
Epidemiological Research  
Health of the Public  
International Health  
Public Health Practice and the World Wide Web  
Thesis in Epidemiology

\*Teaching evaluations available upon request

**MEMBER, MASTERS THESIS AND DOCTORAL DISSERTATION COMMITTEES**

	Student	Title	Year	Role
1.	Daniel Hopwood, B.S.	Recall Bias Study in a Toxic Inhalation Event	1984	Second Member
2.	Agnes Bartok, B.S.	Cerebrovascular Disease and Smoking: A Case-Control Study	1985	Chair
3.	Linda Cowley, B.S.	Estimating the Need for Epidemiologists	1985	Third Member
4.	Louise Gresham, B.S.	Amyotrophic Lateral Sclerosis and Occupational Heavy Metal Exposure: A Retrospective Case-Control Study	1985	Chair
5.	Kathryn Hallgren, B.S.	The Use of Success or Failure in a Hospital Based Smoking Cessation Program as an Indicator of Future Services Utilization	1985	Second Member
6.	Craig M. Bone, M.D.	Hospitalization for Injury and Disease in the U.S. Navy: A Comparison of Nuclear and Conventionally Powered Surface Ships	1986	Chair
7.	Constance Chambers, B.S.	Anorexia Nervosa and Familial Conflict: A Case-Control Study	1986	Chair
8.	Jan Kelley, B.S.	Pregnancy Risk Factors and Reproductive Outcomes Among Hispanic Women in the Comprehensive Perinatal Program	1986	Chair

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9.	Laura Granger, B.S.	Physical Health and Social Support in Significant Others of Cystic Fibrosis Patients and a Comparison Group	1986	Second Member
10.	Moshe Engelberg, Ph.D.	Procuring Incentives for Community Health Promotion Programs	1986	Second Member
11.	L. Alicia Ryden, R.P.T., B.S.	The Epidemiology of Occupational Low Back Pain and Injury	1986	Chair
12.	Gilberto Chavez, M.D.	Estimated Blood Lead Levels in the Mexican Descent Population of the U.S. Southwest, 1982-1983	1987	Chair
13.	Steven L. Shepherd, B.S.	Psychosocial Correlates of Functional Status in Adults with Cystic Fibrosis	1987	Second Member
14.	Mina Lovrich, B.S.	The Relationship Between Fasting Plasma Glucose (FPG) and Immunoglobulin E in a Defined Population: A Cross-Sectional Study	1987	Chair
15.	Shea O'Neil, B.S.	Epidemiology of Dog Bites in San Diego County	1987	Second Member
16.	Erik H. Willis, B.S.	Corrective Lens Use and the Common Cold	1987	Second Member
17.	Maria Columna, B.S.	Application of a Transtheoretical Model to Correlate Acquired Immunodeficiency Syndrome Attitudes and Knowledge Among Ethnic Groups	1988	Second Member
18.	Robert Langer, M.D.	The Public Health Implications of M.D.Lipid and Antihypertensive Interventions for Persons with Moderate Cardiovascular Risk	1988	Chair
19.	Sana Loue, M.D.	Alcohol, Cocaine and Marijuana Use as Risk Factors for the Development of HIV Seropositivity and Various Sequelae	1988	Chair
20.	Chester Nakamura, M.D.	Prevalence of Alcohol Abuse Among the Aged	1988	Chair
21.	Vivian Spry, Ph.D.	Recruiting Survey Respondents to Mailed Surveys: Controlled Trials of Incentive and Prompts	1988	Second Member
22.	Elsa Villarino, M.D.	Analysis of the Prevalence at Birth of Neural Tube Defects in the State of California, 1978-1985	1988	Chair
23.	Kim Yeager, M.D.	The Primary Care Physician's Role in Health Promotion and Sports Medicine – An Evaluation of Medical Education and	1988	Second Member

## Health Services Provision

24.	Moises Nagiel, M.D.	Determination of the Amount of Oral Rehydration Solution Given by Mothers in the Home Setting to Children with Diarrhea in Mexico	1988	Second Member
25.	Alyce Joseph, B.S.	Assessing the Factors Involved in Child Abuse	1988	Third Member
26.	Soora Wi, B.S.	Fluoride and Hip Fractures in California: An Ecological Analysis	1989	Chair
27.	Richard Garfein, B.S.	Bone Density and Physical Exercise	1989	Chair
28.	William Meir, B.S.	Caesarian Births and Sequela	1989	Chair
29.	Carol Miller, B.S.	Parkinson's Disease and Smoking	1989	Chair
30.	Anita Jones, B.A.	A Study of the Reliability and Validity of Two Stress Measures	1989	Second Member
31.	Cheryl Brogan, B.A.	Family Influence on Preschool Children's Exercise Behavior	1989	Second Member
32.	Christa Scheidt-Nave, M.D.	A Pilot Study of Community Cholesterol Screening	1989	Chair
33.	Paula Eisenman, B.S.	The Epidemiology of Occupational Needle Stick Injuries and the Impact of Implementing a New Needle Disposal System	1989	Chair
34.	Ted Grace, M.D.	Evaluation of Human Papilloma Virus Infections of the Cervix: A Decision Analysis Model of Alternative Strategies	1989	Chair
35.	Lee Ann Daniels, B.S.	Rubella Vaccination Status and Attitudes Towards Vaccination Status	1989	Chair
36.	Wendy Kaler, B.S.	Prevalence of Illness Among Infants and Toddlers Cared for in Day Care Centers, Family Day Care Homes, and at Home	1989	Chair
37.	Piera M. Cirillo, B.S.	A Case-Control Study of Pancreatic Cancer in San Diego, California	1989	Chair
38.	Bridget Larson, B.S.	Evaluation of a Worksite Health Promotion Program	1989	Second Member
39.	Mary Garza-Astudillo, B.S.	Primary Care Preventive Services: Use of Hispanic and Diabetic Patients As Indices of Accurate Reporting	1989	Second Member
40.	Christine Kozik, B.S.	The Relative Importance of Acute Non-A, Non-B Hepatitis in a San Diego Community	1989	Chair
41.	Bill Bleicher, B.S.	Socioeconomic Status and Breast Cancer	1990	Chair

## Some Methodological Issues

42.	Rafael Laborin-Laniado, M.D.	Tobacco Use Among Seventh Graders in Tijuana, Mexico	1990	Chair
43.	Stefanie Norman, B.S.	The Predictive Value of Alterations of the Conjunctival Microcirculation for Non-Insulin Dependent Diabetes Mellitus	1990	Second Member
44.	Deirdre Browner, B.S.	Behavioral Components of Cancer Etiology	1990	Chair
45.	David Hewitt, M.D.	The Association of Race and Hypertension: A Cross-Sectional Study of Whites, Blacks, and Mexican-Americans in San Diego	1991	Chair
46.	Monica Brown, B.S.	Head Injuries to School Children in San Diego County	1991	Second Member
47.	Stuart Donaldson, B.S.	The Jolly-Fat Hypothesis: A Study of Obesity and Depression in a Defined Population	1991	Chair
48.	Karen Freeman, B.S.	Is Male Baldness a Predictor of Coronary Heart Disease?	1991	Chair
49.	Ellen Lefkowitz, B.S.	Geographic Distribution of Ovarian Cancer Mortality in the United States: A Hypothesis Regarding Differences in Sunlight	1991	Chair
50.	Andrew Ries, M.D.	Outcome Measures in Pulmonary Rehabilitation: A Multivariate Logistic Regression Analysis	1991	Chair
51.	Lisa Shames, B.S.	Risk Factors Associated with Haemophilus Influenza Type B Vaccine Failures: A Case Control Study	1991	Chair
52.	Heather Feigelsen, Ph.D.	Diagnosing Peripheral Arterial Disease: The Sensitivity, Specificity and Predictive Value of Noninvasive Tests	1991	Chair
53.	Brenda Robyn, B.S.	Tap Water Consumption and Birth Outcomes: A Case-Control Study	1991	Chair
54.	Maria Stoecklin, B.S.	A Theoretical Model of Hispanic Adolescent Sexual Activity: An Exploration of the Role of Acculturation, Sexual Attitudes, and the Family	1991	Second Member
55.	Shelly Rhodes, B.S.	Utilization of a Binding Protein to Determine the Concentration of Cystine in Urine	1991	Second Member

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56.	Karin Coyne, B.S.	The Role of Social Support and Self-Efficacy on Exercise Adherence in a Post-Cardiac Rehabilitation Population	1991	Second Member
57.	Michael Hurst, B.S.	Lipoprotein (a) Levels in Post-Menopausal Women in Oral Premarin Therapy	1992	Chair
58.	Joy Zakarian, B.S.	Determinants of Exercise in a High School Population: An Exploratory Analysis	1992	Second Member
59.	Omar Shafey, B.S.	The Association Between Birth Interval and Nutritional Status Among Iraqi Infants and Children After the Gulf War	1992	Chair
60.	Wesley Stowers, B.A.	The Wind Among the Reeds	1992	Third Reader
61.	Tamara Clark, B.S.	Relation Between Leisure-Time, Physical Activity and Bone Mineral Density in an Older Population	1992	Chair
62.	James Mudge, B.A.	Surfer's Ear	1992	Third Member
63.	Bridget Riley, B.S.	Nutrition and Dementia in a Multi-Ethnic Elderly Population	1992	Second Reader
64.	William Pierson, B.A.	Effects of Reaganomic National Health Care Budget Cuts on San Diego County Death Rates: 1974-1985	1992	Third Reader
65.	Bryan Jackson, M.A.	The Paleodemography of the Pag-Ko Indians of New Mexico	1992	Third Reader
66.	Michael Bursaw, B.S.	The Epidemiology of Lapse of Consciousness Episodes Among San Diego County Residents	1992	Second Chair
67.	Sidney Saltzstein, M.D.	Breast Carcinoma in Women in San Diego County: 1976 and 1980 vs. 1988 and 1989	1992	Second Reader
68.	Renee Matteucci, B.S.	Hispanic Pediatric Trauma Epidemiology: Incidence and Risk for San Diego County-1985 to 1990	1992	Chair
69.	Laurie Schaffroth, B.S.	Breast Cancer Histology and Race	1992	Chair
70.	Jose Relayo, M.D.	Tuberculosis Prevalence in a Metropolitan Correctional Center	1993	Chair
71.	Fernando Rubinstein, M.D.	Management of a Coronary Artery Disease: Gender Bias and Temporal Trends	1993	Chair
72.	Vanessa Miguelino, B.S.	A Study of Cerebrovascular Disease and Cigarette Smoking in Women	1993	Chair
73.	Michael Snedecor, M.D.	Validation of a Physical Activity Survey in a	1993	Second Member



## Population of Runners

74.	Lisa Schamus, B.S.	Epidemiology of Appropriate Measles Vaccination of 2-Year-Old Children in Two San Diego Communities	1993	Second Member
75.	Kamala Deosaransingh, B.S.	Alcohol Consumption Patterns and Their Association With Motor Vehicle Accidents in Native Americans	1993	Chair
76.	Lynn Turner, B.S.	Epidemiology of Vascular Tone Disorders: Migraine Headache and Raynaud's Phenomenon	1993	Chair
77.	Veronica Green, D.D.S.	Outcome from Surgery in the Hospitalized Old	1993	Chair
78.	Patricia Silva, B.S.	A Stochastic Survival Model of Pediatric Near-Drowning	1993	Third Member
79.	Katharine Schubert, B.A.	Variation in Age at Menarche in San Diego County: A Study in Reproductive Epidemiology	1994	Chair
80.	Michelle De Guire, B.S.	Evaluation Research: Assessing the Effectiveness of the San Diego Options Program	1994	Third Member
81.	Eugenia Bastos, B.S.	A Longitudinal Study of Blood Pressure Changes in Three Exercise Groups Using Repeated Measures Analysis Variance	1994	Chair
82.	Anita Valabhji, B.S.	Epidemiology of Epilepsy in the Seychelles Islands	1994	Chair
83.	Carol J. Horvath, B.A.	Relationship of Lung Function Measures to Asbestos and Tobacco Exposure in Shipyard Workers	1994	Chair
84.	Robert Lowok Limlim, M.D.	A Multivariate Epidemiologic Analysis of Poisoning Among Teenagers and Young Adults	1994	Chair
85.	David B. Scharf, B.S., M.D.	Multiple Medication and Nutritional Supplement Use in the Community-Residing Elderly	1994	Second Member
86.	Aileen Murphy, B.S.	Air Pollution and Emergency Room Visits for Respiratory Illnesses in Montreal: A Daily Time Series Analysis	1994	Chair
87.	Kathleen Carroll, B.S.	Otoacoustic Emission Testing in a Normal Neonatal Intensive Care Unit	1994	Third Reader
88.	Patrick Olson, M.D.	Epizootiology of <i>Borrelia burgdorferi</i> in Canines in San Diego County, California	1994	Second Reader
89.	Temitayo Lagundaye, M.D.	A Comparative Study of Hypertension in an Urban and Rural Population in	1994	Chair

## Southwestern Nigeria

90.	Sue Shallow, B.S.	Risk Factors for the Development of Vivax Malaria in a U.S. Marine Battalion in Somalia	1995	Chair
91.	Richard Marks, B.A.	HIV Risk in Migrant Hispanic Farmworkers: Factors Associated with Condom Use with Prostitutes	1995	Chair
92.	Henry Johnson, M.D.	Pedestrian Struck Trauma	1995	Chair
93.	Ruth Bush, B.A.	Blister Incidence in Male Marine Corps Recruits	1995	Chair
94.	Taherah Tabrizi, M.S.	Cancer in Scandinavian Immigrants in the US: 1973-1989	1995	Chair
95.	Cynthia Scofield, B.S.	Disseminated Mycobacterium Avium Complex in a Group of San Diego AIDS Patients: A Screening Procedure to Monitor Therapy	1995	Chair
96.	Thomas Shanks, B.S.	Modeling Lung Cancer Risk with Smoking Variables By Multivariate Linear Regression and Cumulative Damage Models	1995	Second Reader
97.	Armida Diaz, B.S.	The Relationship Between Stool Frequency and Quality of Life in Patients with Active Mild or Moderate Ulcerative Colitis	1995	Chair
98.	David Timberlake, B.S.	Evaluation of Criteria for Classifying Diabetes in an African-American Population	1995	Chair
99.	Jeffrey Alvarez, B.S.	Development of a Spanish Language Literacy Assessment Tool	1995	Second Reader
100.	Eric Schultz, B.S.	A Statistical Method for Detecting Aberrations in San Diego Health Department Data	1995	Chair
101.	Kim Kies, B.S.	Violence as a Public Health Issue: Breaking the Cycle of Violence	1997	Chair
102.	Judy Neely, B.S.	Montgomery County Community Health Assessment	1999	Chair
103.	Ho Hui-Ling, B.S.	Management of Employment During Pregnancy: A Survey of US Residency Directors	1999	Second Reader
104.	Edwin Gabbidon, M.A.	Gang Violence in Wichita	2000	Chair
105.	Margaret Kay Smith, B.S.	Corporate Response to Pregnancy-related	2000	Second Reader

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## Work restrictions: A Pilot Survey

106.	Tammy Von Busch, D.V.M.	Gestational Age at Which Air Force Women Presented for an Occupational Safety Assessment During Pregnancy	2000	Second Reader
107.	Barbara Deenihan, B.S.	Menopausal Health Information in Popular Magazines: An Examination of Topic Frequencies and Readability Scores	2001	Second Reader
108.	Lolem Ngong, B.S.	HIV/AIDS In Camaronian Youth	2001	Chair
109.	J'Vonnah Griffith	Folic Acid Knowledge Among Health Care Providers in Sedgwick County, Kansas	2001	Chair
110.	Maj. Angelique Likely	The effects of a four-month military deployment in the utilization of medical services by family members: a historical cohort control study	2002	Chair
111.	Douglas Woolley, M.D.	Comparison of gait speed and hand dexterity speed as predictors of adverse events and increasing dependence in the aged	2002	Chair
112.	Alexander Brzezny, M.D.	Community Obesity Initiative: Perceptions about Infant Feeding in One Northwest Community	2003	Second Reader
113.	Miriam Ibrahim	Development of Domestic Violence Educational Materials in Spanish Language: Results of a Focus Group Study	2003	Second Reader
114.	Jennifer Keller	Will Sedgwick County Health Department Self-Pay Clients Tolerate Increased Fees? Results of a Focus Group Study	2003	Second Reader
115.	Mark Berry	Process of Health Communication in a Local Health Department	2004	Chair
116.	Steve Werder, DO	Resources for Managing Substance Abuse in Crawford County, Kansas	2004	Second Reader
117.	Elizabeth Ablah	Quantitative Evaluation of "Can It Happen in Kansas: Response to Terrorism and Emerging Infections"	2004	Chair
118.	Claudia Carman	Family Presence in the Emergency Room or Trauma Suite: A Survey of Family Members' Opinions	2004	Chair
119.	Srinivas Bapojie	Comparing the effect of a standardized weight loss program in a cohort of obese patients with and without type ii diabetes mellitus	2005	Third Reader

120. Merilee Zimbelman Addressing Physical Inactivity among Developmentally Disabled Students through Visual Schedules and Social Stories 2005 Third Reader

**PROFESSIONAL SOCIETIES AND HONORS:**

Epidemiology Council, Association of Schools of Public Health, 1991-1996.  
 Editorial Board, Neuroepidemiology, 1992-1997.  
 Board of Directors, San Diego and Imperial Counties Organization for Cancer Control, 1987-1993.  
 American Public Health Association  
 Phi Beta Delta, Honor Society for International Scholars  
 Phi Beta Kappa  
 Epidemiology Section Program Committee, American Public Health Association Annual Meeting, 1988-1996.  
 Core Committee, American Board of Preventive Medicine, National Board of Medical Examiners, 1991-1992.  
 Moderator, EIS Western Regional Conference, 1993.  
 Association of Teachers of Preventive Medicine, 1998-present.  
 School Resource Officers Program, 1999-2000.  
 Samuel J. Crumrine Medal, Kansas Public Health Association, 2000.  
 Editorial Board, Headache, 2001-2002.

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Australia:	Department of Preventive Medicine, University of Western Australia, Perth, Australia.
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India:	Students Project for Amity Among Nations, Office of International Affairs, Iowa State, University and Hyderabad University, India.
Japan:	Balboa Naval Hospital, San Diego, California, and Headquarters, Third Marine Division, Okinawa, Japan.
Mexico:	Autonomous University of Baja California, Tijuana, Mexico, and Tijuana General Hospital, Tijuana, Mexico.

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List of cases previously testified in

1. Belk

v.  
Metabolife International

2. Sayonara Bhattacharya, et al.

v.  
Twin Laboratories, et al.

3. Bloom

v.  
Metabolife

4. Barbara J. Bradley, et al.

v.  
Metabolife International

5. Cooper

v.  
Kunish, et al.

6. Sherri Cox, as Administrator of the Estate of Linda S. Beckman, Deceased v.  
Metabolife International

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7. Ana R. Crucet

v.  
Metabolife International

8. Daigle

v.  
Advocare International, et al.

9. Shirley Franks

v.  
Metabolife

10. Frost

v.  
Perrigo Company

11. Lisa Garcia, et al.

v.  
Metabolife International, et al.

12. Brenda Giffith

v.  
TrimSpa Corporation, et. al.



List of cases previously testified in

13. Charles Griffith  
v.  
TrimSpa Corporation, et al.

14. Hendriksen  
v.  
Metabolife

15. Wilmer Green Hudson  
v.  
Metabolife

16. Cynthia A. Johnson, et al.  
v.  
Metabolife International

17. Tina Johnson  
v.  
Metabolife International

18. Sharon Jones  
v.  
Wal-Mart Stores, et al.

19. Shirley Kemp, et al.  
v.  
Metabolife International

20. Lisa Kennedy, et al.  
v.  
H.E. Butt Grocery Co, et al.

21. Charlene Lattino, et al.  
v.  
Metabolife International, et al.

22. John A. Lesemann, et al.  
v.  
General Nutrition Companies, et al.

23. Paul Lewis  
v.  
Metabolife International

24. Livsey  
v.  
Metabolife

25. Lowe

List of cases previously testified in

V.  
Metabolife International

26. Michael MacDonald, et al  
V.  
Twin Laboratories, Inc., et al

27. Billie Ann Martin, Individually and as Executrix of the Estate of  
Pamela Faye Williams, et al.  
V.  
Gold Star Nutrition, et al.

28. Howard McDaniel, et al.  
V.  
AdvoCare International, et al.

29. Annie McClain  
V.  
Metabolife

30. Metabolife International  
V.  
Susan Wornick, et al.

31. Luis Enrique Moya  
V.  
Metabolife International

32. Neumann  
V.  
Herbalife

33. Darrell Petty, et al.  
V.  
Metabolife International, et al.  
V.  
Wal-Mart Stores Texas, LP

34. Rachelle Lucca Potter  
V.  
Metabolife International

35. Ramie Alonzo Rodriguez  
V.  
Twin Laboratories, Inc. and General Nutrition Company, Inc.

36. Sanchez  
V.  
Metabolife

37. Sapp

List of cases previously testified in

V.  
Natural Balance

38. Scurlock  
V.  
Twin Laboratories

39. Travis Stephens, et al.  
V.  
Twin Laboratories, Inc., et al.

40. Stumpe  
V.  
Metabolife

41. Stephanie Turner  
V.  
Rexall Sundown, Inc.

42. Patricia Diane Tynes, et al.  
V.  
Advocare International, et al.

43. Wachovia Bank, et al.  
V.  
Rella Bourn, et al.

44. Wachovia Bank, et al.  
V.  
Changes International, et al.

45. Robin White, et al.  
V.  
Metabolife International